

**UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF MISSOURI  
SOUTHEASTERN DIVISION**

**IN RE: DICAMBA HERBICIDES  
LITIGATION**

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**MDL No. 2820**

**MEMORANDUM and ORDER**

Plaintiffs in this Multi-district Litigation filed a Crop Damage Class Action Master Complaint against defendants Monsanto and BASF<sup>1</sup> on August 1, 2018. The parties have been engaged in discovery in preparation for a motion for class certification. Numerous experts have been retained, and the parties have filed 15 motions to exclude expert testimony. This memorandum and order addresses the plaintiffs' experts Dr. Stevan Knezevic, Dr. Dennis Gardisser, and Dr. Ford Baldwin, and Monsanto's expert Dr. George Milliken.

**Factual Background**

Plaintiffs are soybean farmers from eight states: Arkansas, Illinois, Kansas, Mississippi, Missouri, Nebraska, South Dakota, and Tennessee. Each plaintiff alleges that its soybean crop was damaged by the herbicide dicamba when neighboring farmers planted genetically modified dicamba-resistant seeds and sprayed that crop with dicamba. Plaintiffs challenge Monsanto's commercialization of its dicamba-resistant cotton seeds in 2015 and soybean seeds in 2016 (collectively, "Xtend seeds"). The United States Department of Agriculture ("USDA") allowed the sale of the dicamba-resistant seeds in January 2015. However, plaintiffs contend that their commercialization was premature

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<sup>1</sup> The Court will refer to both defendants BASF Corporation (a Delaware corporation) and BASF SE (a German corporation) as "BASF." BASF Corporation is alleged to be a subsidiary and North American agent for BASF SE.

and improper because the United States Environmental Protection Agency (“EPA”) had not yet approved a dicamba herbicide for use over the top of crops grown from those seeds. Plaintiffs add that the dicamba-resistant seeds were also tolerant to application of other herbicides, like Monsanto’s glyphosate-based Roundup-branded herbicides.

Only one plaintiff in the Master Complaint brings claims related to 2016, the year Monsanto sold Xtend seed but did not sell the corresponding herbicide. That plaintiff, Jerry Franks of Missouri, represents himself and a class of “Missouri 2016” plaintiffs.

The other plaintiffs allege that in 2017 they grew non-dicamba-tolerant (“non-DT”) soybeans that were damaged by dicamba herbicide used on fields that were planted with dicamba-tolerant Xtend seeds. By 2017, the EPA had approved Monsanto and BASF’s new low-volatility dicamba herbicides (respectively named XtendiMax and Engenia). Earlier versions of dicamba had been on the market since the 1960s (though none manufactured by Monsanto), but it was not approved for in-crop use due to its volatility and propensity to drift (sometimes taking other herbicides with it), meaning it could cause damage to other, off-target growing plants. XtendiMax and Engenia were developed to address original dicamba’s volatility problem so that they could be used over-the-top of crops, during the growing season, without harming nearby, non-tolerant crops.

The 2017 plaintiffs challenge the design and sale of Monsanto and BASF’s dicamba herbicide products. Plaintiffs contend, despite defendants’ representations to the contrary, that both are unsuitable for in-crop use because they too, like the earlier versions of dicamba, are volatile and prone to move off-target and damage nearby,

sensitive crops. The claim, then, is that the defendants, in their pursuit of increased profits, pushed the Xtend seeds and XtendiMax and Engenia herbicides forward and misrepresented the system as safe, knowing that non-dicamba-resistant crops and plants would be damaged. In fact, plaintiffs contend that such damage was to defendants' benefit, as it would cause farmers to defensively purchase dicamba-resistant seed to avoid damages.

Each plaintiff, on behalf of itself and a state-wide class, brings claims under its own state's laws, and they also seek to represent a nationwide class pursuing claims under the Lanham Act.<sup>2</sup> In anticipation of moving for class certification, the parties have retained experts on various matters.

### **Legal Standard**

The expert testimony challenged here is to be offered in support of class certification. Class certification examines only whether claims "are appropriate for class resolution." *Postawko v. Missouri Department of Corrections*, 910 F.3d 1030, 1037 (8th Cir. 2018). Federal Rule of Civil Procedure 23 sets forth the requirements that must be met in order to sustain a class action. Plaintiffs plan to seek certification under Rule 23(a), 23(b)(1), and 23(b)(3). Rule 23(a) sets forth the requirements for all class actions: the class must be so numerous that joinder is impracticable; there must exist common questions of law or fact; the claims or defenses of the parties must be typical of the

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<sup>2</sup> The Master Complaint does not define a Nebraska class. This appears to be a mistake, as the complaint does refer to such a class in Counts 60-70. In addition, the Court notes that it dismissed the nationwide class action claims under the Lanham Act against BASF for lack of personal jurisdiction.

claims or defenses of the class; and the representative parties will fairly and adequately protect the interests of the class.

Rule 23(b) sets forth the different types of class actions. For a Rule 23(b)(1) class action, plaintiffs must show that prosecuting separate actions would create a risk of inconsistent adjudications or adjudications that would be dispositive of interests of other members not parties to the action. Under Rule 23(b)(3), plaintiffs must show there are questions of law or fact that predominate over any questions affecting only individual members, and that a class action is superior to other available methods for adjudicating the matter.

Both plaintiffs and defendants have retained experts to address various aspects of class certification, including, for example, whether “questions of law or fact common to class members predominate.” *In re Zurn Pex Plumbing Products Liability Litigation*, 644 F.3d 604, 613 (8th Cir. 2011). To be admissible, Federal Rule of Evidence 702 requires the expert testimony (1) help trier of fact determine facts at issue; (2) be based on sufficient facts or data; and (3) be the product of reliable principles and methods. In addition, the expert must have reliably applied those principles and methods to facts of the case. This Court must act as a “gatekeeper” in determining the admissibility of expert testimony and must “make a preliminary assessment of whether the proffered expert’s methodology is both scientifically valid and applicable to the case.” *Bland v. Verizon Wireless, (VAW) LLC*, 538 F.3d 893, 896 (8th Cir. 2007); *see also Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 597 (1993). A district court’s inquiry on class certification is “tentative, preliminary, and limited.” *In re Zurn*, 644 F.3d at 613 (quoting

*Coopers & Lybrand*, 437 U.S. 463, 469 n.11 (2011)). Thus, the Eighth Circuit requires that this Court must “scrutinize the reliability of the expert testimony in light of the criteria for class certification and the current state of the evidence.” *Id.* at 614.

### **The Motions to Exclude**

The parties move to exclude the testimony of 15 experts being offered in support of or in opposition to the plaintiffs’ forthcoming class certification motion. The Court addresses four of those motions in this memorandum and order.

#### **I. Plaintiffs’ expert Dr. Stevan Knezevic**

Plaintiffs’ expert Dr. Steven Knezevic, Ph.D., is a weed scientist at the University of Nebraska, where he conducts research on herbicides and serves as an expert consultant to companies including the defendants in this case. He was retained to provide opinions regarding the dose response of soybeans exposed to dicamba, including Xtendimax and Engenia. Plaintiffs seek to use Knezevic’s testimony, combined with that of two other experts, to establish that causation can be shown through common proof and that all class members suffered damage.

##### **A. Knezevic’s opinions**

Before the initiation of this litigation, Knezevic and others at the University of Nebraska studied the dose response of soybeans exposed to dicamba herbicides Clarity (an old formulation of dicamba), Engenia, and Xtendimax. Field trials were conducted in 2017 and 2018 in Concord, Nebraska using non-dicamba resistant soybeans and with dicamba applications at three different stages of growth. Plots had four rows of each of three soybean types (plus a dicamba-tolerant soybean as a check). Visual evaluation of

injuries to the plants were conducted at four different intervals following application of the dicamba. The soybeans were harvested from the two middle rows in each plot. Then, Knezevic used a four-parameter log-logistic regression model to describe the relationship between the amount of dicamba applied and the various observations (including visual observations and soybean yield). The regression analyses helped estimate the dicamba doses (the “ED value”) causing a range of injury levels. Knezevic used software named R and its add-on “drc” (for “dose response curves”) to determine the dicamba threshold levels. Knezevic was interested in determining the dose of dicamba that would cause a 1% or 5% yield loss, *i.e.*, the 1% and 5% thresholds.

Knezevic opines that yield loss generally increased with increased “micro-doses” of dicamba. The “micro-doses” used were at levels 1/10, 1/50, 1/100, 1/500, and 1/1000 of the standard product label rate for use in dicamba tolerant systems. Knezevic explained that, for example, 1/10th the label rate is equivalent to 3 tablespoons applied over an area the size of a football field. Yields of soybean plants treated with 1/10 of the label rate of Xtendimax dicamba at the early flowering stage were most reduced, causing a 96% yield loss when compared to controls. Soybeans treated with 1/1000 label rate caused 20% (in 2017) and 7% (in 2018) yield loss when applied at the early flowering stage. Knezevic notes that another research paper authored by Egan and Mortensen in 2012 reported that the 1/1000 of the label rate corresponded to the potential volatility rates.

Finally, although this study's subject soybeans experienced only one exposure to dicamba, Knezevic opined that multiple exposures to dicamba as might occur in practice would result in lower threshold values and thus greater yield losses.

**B. Defendants' motion to exclude [#408]**

Defendants seek to exclude Dr. Knezevic's testimony as to three issues.

**1. Volatility rate of Xtendimax and Engenia**

First, defendants argue that this Court should exclude Knezevic's opinion that a dose equal to 1/1000 of the labeled rate of XtendiMax and Engenia corresponds to the volatility rate for these products. That "volatilization rate," defendants argue, is based on the 2012 paper by Egan and Mortensen that measured the rate of a different, older formulation of dicamba. Knezevic himself admits that the old products are more volatile than the Xtendimax and Engenia versions, and he has no data to support that the 1/1000 rate applies to the newer dicamba formulations. Plaintiffs respond that Knezevic isn't opining on the volatilization rate—rather, that he is simply describing the results of a single study. Thus plaintiffs admit that Knezevic is not offering an opinion on the Xtendimax and Engenia volatilization rates. The Court will grant defendant's motion as to this issue.

**2. Knezevic's dose-response opinions**

Next, defendants argue Knezevic's dose-response opinions should be excluded for several reasons. First, plaintiffs' case is based on the theory that their soybean crops were harmed by exposure to vaporized dicamba. Knezevic extrapolates from data involving the use of liquid dicamba. Knezevic admits that plants absorb liquid differently from

gas—plants take in gas through stomates, on the bottom of the leaf, whereas liquid can be absorbed anywhere the plant has green tissue. As a result, he agrees that “there’s more chance” for soybeans “to absorb liquid than there is gas.” Despite the apparent difference in absorption rate, Knezevic testified that yield losses would be the same from exposure to dicamba vapor as to dicamba liquid if the concentration in vapor were the same as concentration in liquid reflected in the report. But it is undisputed that the concentration of dicamba in gaseous form is typically lower than the concentration of dicamba in liquid form. In any event, Knezevic admitted that he “has not done any” research and “is not aware of any data” on this issue, so he “cannot say” whether vaporized dicamba would affect soybeans the same as liquid. Knezevic testified:

Q: What does a soybean plant have a higher absorption rate of, a liquid or a gas?

...

A: I don’t have an answer to that question.

Q: But you made a statement in answer that you felt like soybeans were not any more tolerant to a gas than they were a liquid exposure. So you have no basis to make that opinion?

...

A: I guess not, yeah.

...

Q: And do you disagree with your prior testimony you gave today to that regard?

A: I don’t have data to – I don’t have data to make a judgment call on that.

[#408-2 at p. 223-24.]

It is plaintiffs' burden to prove the reliability of Knezevic's opinions, not defendants' burden to disprove it. *Menz v. New Holland N. Am., Inc.*, 507 F.3d 1107, 1114 (8th Cir. 2007). To the extent plaintiffs argue their soybeans were affected by drift (liquid) and not by volatility (vapor), Knezevic's liquid dose-response opinions may be relevant. But Knezevic's dose-response opinions are otherwise inadmissible for the additional reasons discussed below.

Aside from the problem of comparing liquid to gas exposures, defendants argue that Knezevic's data suffer from fatal problems. His sample sizes are small — the 2018 study involved only four replications of six different dose treatments. According to Monsanto's statistics expert Dr. George Milliken, Knezevic should have conducted 150 replications in order to detect a 1% yield loss with statistical reliability. This, Milliken says, is the minimally accepted standard for statistical reliability set by the EPA and USDA, which require levels of 95% confidence at a power of 80% (still allowing a 20% chance that random fluctuations could have generated the results). Plaintiffs acknowledge that such data would be required for "hypothesis testing," but that Knezevic was instead "estimating [the] size of effects." Knezevic opined there were enough replications to fit a response curve to describe the estimation and thus the model was statistically significant and appropriate. Milliken testified that that the EPA and USDA require that experiments have an 80% power of detecting a certain specified difference between two treatments. Regardless of how Knezevic characterized his study, he was studying the difference between a zero dose of dicamba and a dose that would result in a 1% to 5% reduction in yield. The EPA and USDA's standards would require 150 replications of such a study,

not four. Tellingly, however, plaintiffs do not identify what other standard is appropriately applied to ensure the statistical significance of Knezevic's study.

Indeed, the limitations of Knezevic's data set is underscored by another problem: yield variability. For Knezevic's 12 controls—those with no dicamba exposure—yields ranged from 3,656 kg/ha to 4,763 kg/ha with an average of 4,461 kg/ha.<sup>3</sup> But Knezevic's range of yields for a dicamba exposure of 1/1000 of the labeled rate at the full flowering stage is 3,797 to 5,064 kg/ha, a yield range within or above the range of the unexposed controls. Milliken states the obvious: that there is no statistical significance where Knezevic's own model suggests that the same yield is expected regardless of whether soybeans are exposed to dicamba. Plaintiffs reply that the variability is expected when measuring biological parameters. But this is not helpful where the dicamba-exposed soybeans produced anywhere from a 13.5% yield **gain** to a 14.9% yield loss when compared to the average unexposed control. This Court is confounded by these results and the plaintiffs' failure to explain them.

Monsanto's statistics expert Milliken also asserts that Knezevic incorrectly applied his model to his data. The model is a four-parameter log-logistic regression model. Such a model has the following parameters:

- the maximum yield (for zero dose) ("D")
- the minimum yield (achieved by the model as the dose increases) ("C"),

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<sup>3</sup> Defendants' briefing refers to these results in "bushels," which measures the volume of dry goods. Knezevic's report uses kilograms per hectare (kg/ha) as the unit for these results. The Court reflects the results here in the units used by Knezevic. A hectare is equal to approximately 2.47 acres.

- the “ED50” (which is equal to the dose of dicamba where the yield is equal to the average of the maximum and minimum yields from the model —  $(D+C)/2$ ), and
- the slope of the line as it passes through the ED50 dose.

From this model, Knezevic obtained estimated dose (“ED”) values that cause a given reduction in yield. Milliken testified that, to arrive at the ED50 parameter, Knezevic averaged the maximum yield (D) with the minimum yield (C) derived from his data (*i.e.*, the yield achieved using higher doses of dicamba). Instead, a true ED50 number would have been the average of the maximum yield and zero. That is because, in this context, there is a dose of dicamba that would reduce the yield to zero — thus, zero is the minimum yield. Because Knezevic averaged in a higher number for C instead of zero for C, his ED50 — calculated as  $(D+C)/2$  — was too high, resulting in an overestimation of yield impact by low dosages of dicamba. Plaintiffs respond that, even when Milliken ran his model using zero for the minimum yield (C value), that the results were similar to Knezevic’s results. Defendants deny this; in fact, Milliken testified that his results were similar across the three data sets (2018 data, 2017 data, and the Engenia data), not that his results were the same or similar when C was set at zero for a given data set.

The defendants’ next criticism of Knezevic’s analysis is that his results cannot be replicated using the R software Knezevic used. *Daubert* requires that someone else using the same data and methods be able to replicate the results. *Zenith Elecs. Corp. v. WH--TV Broad. Corp.*, 395 F.3d 416, 419 (7th Cir. 2005) (“Under *Daubert*’s testability factor, the primary requirement is that ‘[s]omeone else using the same data and methods . . . be able

to replicate the result[s].’’). Although Knezevic discloses that he used the R software, Knezevic testified that the R software is used by inputting codes into a Microsoft Excel spreadsheet, and Knezevic did not disclose the codes he used within Excel. In his deposition, Knezevic was unsure of whether he still possessed the codes.

Milliken attempted to replicate Knezevic’s results in R without the codes—a feat which plaintiffs and Knezevic assert was possible. And in fact, plaintiffs argue that Milliken’s R analysis for the 2018 data shows threshold dose results that are similar to or lower than those reported by Knezevic. However, the values cited by plaintiffs are the results Milliken obtained while trying to replicate Knezevic’s results in R without Knezevic’s codes. Plaintiffs ignore that the models that produced those ED values also generated negative values for C—the low-yield parameter discussed above. The plaintiffs attempt to discredit Milliken’s use of negative C values because it is biologically impossible for yields to be negative. But that is Milliken’s point. Milliken testified that the model that produced those ED values is in fact invalid due to the generation of the negative C values. Thus, those values—which plaintiffs rely upon to bolster Knezevic’s results—serve only to underscore the unreliability of Knezevic’s analysis. Not only was Milliken unable to replicate Knezevic’s statistical analysis, but the results he did generate reveal impossible values, showing that the model was unreliable.

In sum, Knezevic’s dose-response opinions suffer from numerous problems. His study was based on liquid dicamba (not vaporized dicamba), and the evidence regarding whether a fair comparison can be drawn between liquid and vapor is unclear. In addition,

Knezevic conducted too few replications to allow for a statistically reliable analysis, a situation underscored by the fact that his own data shows that treating soybeans with dicamba resulted in anywhere from a 13.5% yield gain to a 14.9% yield loss when compared to the untreated control. Furthermore, in his regression analysis, Knezevic used a higher number for his “minimum yield” despite the fact that the minimum possible yield is in fact zero. Finally, Milliken was also unable to replicate Knezevic’s statistical analysis due to Knezevic’s failure to provide the necessary codes. The Court finds that, under these circumstances, Knezevic’s dose-response opinions are unreliable and unhelpful, and those opinions will thus be excluded.

### **3. Effect of multiple exposures**

Knezevic’s report also includes that, although the soybeans in his study were exposed to dicamba one time, he believes that multiple dicamba exposures could lead to a lower threshold dose and more yield loss. Defendants argue that Knezevic merely assumes this and that he, himself, has conducted no studies on it. However, the record shows that Knezevic relied on unspecified scientific studies, and, furthermore, Knezevic is an expert. He is qualified to opine—based on his education, experience, and training—that multiple exposures are potentially more harmful than single discrete exposure. *See, e.g.,* Fed. R. Evid. 702 advisory committee’s notes (“Rule 702 expressly contemplates that an expert may be qualified on the basis of experience.”) Further, tellingly, defendants cite no opinion to the contrary.

### **C. Conclusion**

In sum, the Court will exclude Knezevic's opinions as to the volatility rate of Xtendimax and Engenia, Knezevic's dose-response opinions, and his opinions on the effect of multiple exposures. Defendants' motion to exclude certain opinions of Dr. Knezevic is GRANTED in part and DENIED in part.

## **II. Plaintiffs' Expert Dr. Dennis Gardisser**

Dr. Dennis Gardisser is an agricultural applications expert who has previously worked for BASF to teach applicators how to apply Engenia, BASF's over-the-top dicamba herbicide. He has a B.S., an M.S., and a Ph.D. in agricultural engineering and is a retired biological and agricultural engineering professor. Plaintiffs retained Dr. Gardisser to explain off-target movement of dicamba. Plaintiffs state that Gardisser's opinions, when combined with Knezevic and Baldwin, establish causation can be shown through common proof and that all class members suffered damage.

### **A. Gardisser's opinions**

Dr. Gardisser visited 25 to 50 fields that allegedly showed dicamba exposure in 2017, and he visited another approximately 12 such fields in 2018. He also read an EPA summary of volatility studies and Dr. Knezevic's report regarding dose responses and yield loss.

Dr. Gardisser's opinions pertinent to the defendants' motion include the following: (1) defendants' dicamba products volatilize in sufficient amounts to cause uniform, class-wide symptomology; and (2) non-DT soybeans exposed to dicamba moving through volatility, and exhibiting symptomology, suffered yield loss.

**B. Defendants' motion to exclude [#415]**

Defendants seek the exclusion of the following opinions.

**1. Volatility opinions**

Defendants first seek exclusion of Gardisser's opinion that off-target movement of dicamba via volatility into an inversion layer caused uniform, class-wide damage to plaintiffs' non-dicamba tolerant soybeans in 2017 and 2018. In support, defendants argue that (1) Gardisser did not test his hypothesis that wide-spread injury was caused by dicamba volatilizing into inversion layers; (2) his limited field inspections and review of the EPA summary did not constitute reliable methodology; and (3) Gardisser admits his methodology is flawed.

Plaintiffs point out that Gardisser relied on the defendants' own test results, which were submitted to the EPA and which the EPA summarized in a report. Those tests, plaintiffs say, showed volatility over fields in sufficient quantities to give rise to yield loss. At the same time, however, Gardisser admitted in his deposition that the EPA's modeling showed that the amount of volatilized dicamba reaching the edges of dicamba-treated fields did not reach or exceed the "no-effect level" for dicamba on soybeans. In addition, Gardisser opines that he relied on Knezevic's numbers for the dicamba dose that would cause yield loss, and this Court has excluded Knezevic's opinion on that matter.

Further, defendants point out that Gardisser's opinion is based on unrecorded observations made while inspecting fields in Louisiana, Mississippi, Tennessee, Arkansas, and Missouri. He took no samples, nor did he even keep a record of which fields he visited. Plaintiffs point out that he had not been engaged in this case when he

visited those fields. Regardless, he testified that dicamba symptomology is unique and each field he visited exhibited prevalent dicamba symptomology. And, in any event, the failure to document his findings goes to the weight of his testimony, not its admissibility.

Gardisser's conclusion that the fields he visited had been damaged by volatilized dicamba is based on the fact that during the time of his inspection, some 3.6 million acres of non-DT soy were damaged compared to no reports of damage to dicamba-resistant soy. He adds that in prior years, there were fewer than 40 reports of dicamba damage nation-wide, compared to 1,300 reports in Arkansas alone in 2017. These remarkable numbers, he explains, basically by process of elimination of other causes, could only be due to dicamba volatilization. To the extent Gardisser opines that the fields he visited were exposed to volatilized dicamba based on the symptomology he observed, the Court will allow that testimony as within Gardisser's education, training, and experience.

At the same time, however, Gardisser extrapolates his opinions to the myriad fields in other states that he did not visit. Defendants maintain that Gardisser's opinions as to the not-visited fields are essentially unhelpful because individual inspections of fields are necessary to determine the origin of the symptoms. Notwithstanding plaintiffs' arguments above tending to show that dicamba damage was widespread and obvious, Gardisser admitted some fields he visited showed symptoms of exposure from dicamba drift rather than inversions. Even plaintiffs say is it "false" that "all" non-DT fields were damaged by volatility. In fact, Gardisser stated that 14% of the symptoms he observed were caused by off-label misapplication of dicamba resulting in drift, tank contamination, or some other unknown source. Fields that are exposed to dicamba spray carried by wind

(i.e., drift) show more symptoms closer to where the spraying occurred and fewer symptoms as one moves away from it. In contrast, fields exposed to dicamba through inversion show uniform symptoms all over the field. Gardisser thus appears to agree that individual investigation of a given field is required to determine whether dicamba symptomology is the result of third-party misuse of dicamba that drifted, in which case defendants may try to put the blame on those third parties. It is also relevant that, although Gardisser stated that his opinions applied even to states where he conducted no field inspections, he lacks familiarity with inversions outside Arkansas.

Ultimately, Gardisser cannot opine that volatilized dicamba caused “uniform, class-wide damage” to plaintiffs’ non-DT soybeans while also admitting that some 14% of fields showed evidence of another contamination vehicle, like drift, which by definition causes non-uniform damage. The Court finds that his opinion is neither reliable nor helpful in the context of class certification. This opinion will be excluded.

## **2. Yield loss opinions**

Gardisser opines that “within a reasonable degree of scientific certainty, non-dicamba tolerant soybeans exposed to dicamba moving through volatility, and exhibiting dicamba symptomology, suffered yield loss.” Defendants argue that this opinion must be excluded because he did not review each plaintiff’s yield records. Plaintiffs state that Gardisser properly relies on Knezevic’s report and on the fact that defendants’ own studies show concentrations of dicamba volatiles exceeding Knezevic’s calculations move onto non-target soybeans. To be sure, all agree that there is yield loss at some

dosage point, but the amount cannot be determined. This Court has excluded Knezevic's opinion on this matter. Thus, Gardisser's yield loss opinion will be excluded.

### **III. Plaintiffs' Expert Dr. Ford Baldwin**

Plaintiffs' expert Dr. Ford Baldwin is another weed scientist who has been working with herbicides and studying off-target movement for more than 40 years. He is Professor Emeritus in weed science at the University of Arkansas. Much of Dr. Baldwin's testimony overlaps with that of Dr. Gardisser.

#### **A. Baldwin's opinions**

Dr. Baldwin opines that every non-DT soybean field in the eight states at issue was exposed to dicamba through off-target movement of dicamba applied to Xtend seeds because of dicamba's volatility and long-range transport. Further, Baldwin opines that exposure to that dicamba caused widespread, uniform, landscape symptoms that resulted in injury to the non-DT soybeans. Defendants argue that plaintiffs need Baldwin's testimony to prove, for purposes of class certification, that every grower of non-DT soybeans in the relevant eight states suffered uniform and identical damage from the alleged off-site movement of dicamba due to volatility. Baldwin's testimony, defendants conclude, is insufficient to prove those points and must be excluded.

#### **B. Defendants' motion to exclude [#409]**

Defendants advance two arguments for excluding Baldwin's testimony. First, they contend that Baldwin lacks the necessary qualifications to offer a reliable expert opinion. Second, defendants argue that Baldwin inferred the alleged injury and cause rather than following a sound scientific methodology to reach his conclusions.

This Court keeps in mind that it must “scrutinize the reliability of the expert testimony in light of the criteria for class certification and the current state of the evidence.” *In re Zurn*, 644 F.3d at 614. Even defendants admit that Baldwin may be qualified to offer opinions on soybean symptomology for fields he actually visited, but plaintiffs seek to use Baldwin more broadly. Again, Baldwin opines that non-DT soybeans across eight states experienced uniform dicamba symptomology that resulted in damages. However, Baldwin has never even visited soybean fields in Nebraska or South Dakota, and he made no substantial observations in Mississippi, Tennessee, and Illinois. He personally observed fields only in Arkansas and southeast Missouri.

Unlike his work in the *Bader Farms* case, Baldwin has not investigated or accounted for differences in geography and growing conditions. For example, Baldwin admits that he does not know if some states (such as Nebraska, Kansas, South Dakota, and Illinois) experienced the same alleged air mass loading—which may occur after dicamba volatilizes into an inversion—that he claims to have observed in the Arkansas and Missouri fields he visited.

Nonetheless, plaintiffs argue that there is ample support for Baldwin’s conclusions, including dicamba’s physical properties, known dicamba symptomology, and the comparison of frequency of complaints of off-target dicamba movement before and after release of Xtend seeds. But the leap Baldwin makes—extrapolating to non-DT soybeans in eight states from his observations in Missouri and Arkansas—goes too far. Baldwin’s own articles discuss, on a case-by-case basis, the multiple factors that may impact and contribute to off-site movement of an herbicide. For example, he has

identified “drift from an adjacent field, drift from long distances, temperature inversion issues, plane getting in the wrong field, farmer getting his own fields mixed up, contamination in the load [and applicator] mess-ups [and] unlabeled containers,” as well as tank contamination. Baldwin also admits that crops can recover from herbicide injury, and he typically returns to fields to see if symptomology changes. Baldwin’s opinions here do not allow for those considerations and mitigating conditions.

Although experts commonly extrapolate from existing data, “nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert.” *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997). “A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.” *Id.* Indeed, that appears to be the case here. The Court concludes that, although Baldwin clearly has the qualifications and experience to opine on the volatility and off-target movement of dicamba, his opinions related to dicamba injuries to fields he has not visited must be excluded.

#### **IV. Monsanto’s expert Dr. George Milliken**

Monsanto’s expert Dr. George Milliken, Ph.D., is a professor emeritus in Statistics at Kansas State University who has more than 50 years’ experience in statistical study design and analysis with a specific focus on agricultural studies. Defendants retained Milliken to opine on plaintiffs’ expert Dr. Knezevic’s use of the four-parameter log logistic model.

Plaintiffs make four arguments in support of their motion. Plaintiffs argue (1) Milliken's opinion is inconsistent because he admits that Knezevic used the log logistic model appropriately, and (2) Milliken's speculations about the C-value on the results of estimated dose are unsupported and contradicted by Milliken's own results. Both arguments involve Milliken's opinion that Knezevic was wrong to derive "C"—the minimum yield value—from the data rather than setting it to zero. The Court disagrees that Milliken was inconsistent on this point. Milliken agreed that sometimes C is not set to zero, but that it should have been for the purposes of this statistical analysis because there is some level of dicamba dose that will reduce the yield to zero. Plaintiffs appear to muddy this issue by noting that Milliken is not a weed scientist, so he is not qualified to opine on what constitutes a "high dose" of dicamba—plaintiffs suggest that the 1/10 label rate was a "high dose" and that the derived C value was therefore appropriate. That does not diminish Milliken's opinion, however, and plaintiffs do not refute, that at some dose in this context, the yield will be zero.

The Court also disagrees that Milliken's results contradict his testimony. As discussed above, Milliken did not testify that he ran analyses with C set to zero with the same results of Knezevic. Instead, he testified that his results across the three data sets were the same. On that note, plaintiffs complain that Milliken produced only his results for the 2018 data and suggest that the analysis from the other two data sets would have been to plaintiffs' benefit. Defendants deny this, too, and contend that they would have furnished the other analyses had plaintiffs so-requested it.

In addition, plaintiffs argue that Milliken's results for 1% or 5% yield loss with C set to zero are similar to Knezevic's results where C is a derived value. However, Milliken explains that there was—as discussed above—too much yield variability in the control data, so any similarity in results at this level is not statistically meaningful.

Next, plaintiffs argue that the analysis Milliken ran using SAS software instead of R software was unreliable because it was based on “manufactured datapoints.” Defendants respond, however, and plaintiffs do not refute, that those numbers are not datapoints but rather inputs by the SAS software to fill in the curve on the dose-response graph. The numbers were necessary because the data set was limited. Further, defendants point out that plaintiffs' counsel did not ask Milliken about those numbers at this deposition.

Plaintiffs' final argument is that Milliken's R results were the same or similar to Knezevic's R results. That argument, however, was discussed and dismissed above.

Plaintiffs' arguments in favor of excluding Milliken's expert testimony fail. The motion is DENIED.

### **CONCLUSION**

The defendants' motions to exclude the expert testimony of plaintiffs' experts will be granted as to Gardisser and Baldwin and granted in large part as to Knezevic. The Court recognizes that the testimony of those three experts appears critical to plaintiffs' class certification motion. As such, the Court will withhold rulings on the remaining experts and will consider them, if necessary, as part of the class certification briefing.

Finally, the Fourth Case Management Order states that any motion for class certification is due 14 days after this Court rules on the parties' *Daubert* motions. The 14-day time period shall begin to run on Monday, December 2, 2019.

Accordingly,

**IT IS HEREBY ORDERED** that defendants' motion to exclude the testimony of Dr. Stevan Knezevic [#408] is GRANTED in part and DENIED in part.

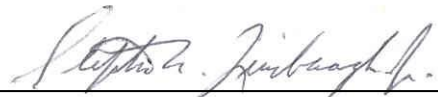
**IT IS FURTHER ORDERED** that defendants' motion to exclude the testimony of Dr. Dennis Gardisser [#415] is GRANTED.

**IT IS FURTHER ORDERED** that plaintiffs' motion to exclude the testimony of Dr. Ford Baldwin [#409] is GRANTED.

**IT IS FURTHER ORDERED** that plaintiffs' motion to exclude the testimony of Dr. George Milliken [#412] is DENIED.

**IT IS FINALLY ORDERED** that the plaintiffs' motion for class certification is due December 16, 2019.

Dated this 27th day of November, 2019.



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STEPHEN N. LIMBAUGH, JR.  
UNITED STATES DISTRICT JUDGE